

# **Using VoiceThread for Professional Development: Probeware training for science teachers**

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**Abstract:** The development of technologies such as probeware requires training, not only in its use, but also in its integration into the curriculum. It is a common practice for schools to spend large portions of their budget on purchasing technology while neglecting to provide funding for the much-needed professional development. The availability of online professional development has provided in-service teachers opportunities to overcome traditional barriers of distance and time and allowed them to seek out and participate in much needed training. In recent years online instruction has incorporated the use of Web 2.0 tools to facilitate professional development for science teachers. While research on the use of Web 2.0 tools in professional development have been conducted, research on newer tools, such as voicethread, that can be used to deliver instruction is limited. Considering the increased use (purchase) of probeware in our schools the question of whether or not professional development can be effectively delivered through the use of VoiceThread has been the focus of this research.

## **Introduction**

Probeware is a scientific tool that is interfaced with computer software and used to collect, store and analyze data. The use of probeware in our schools is not new, and many schools have invested in the purchase of probeware, but relatively few have used the technology due to limited training opportunities. Barriers to training opportunities continue to exist even as numerous professional educational organizations continue to support the need for quality and sustained professional development that will enable teachers to fully integrate technology into their practice. The use of Web 2.0 technologies such as VoiceThread that allow the creation of online presentations, discussions and collaboration may overcome barriers that have traditionally prevented teachers from attending much needed professional development. This instructional design project explores the use of online tools such as voicethread as a tool for the delivery of professional development in science education through voicethread.

## **Probeware in Science Education**

The integration of digital technologies in science teaching has been echoed by numerous calls for reform that favor the use of technology for students to learn science content and processes (Dani & Koenig, 2008). In support of this claim Dani and Koenig refer to educational organizations such as the Association for Science Teacher Education (ASTE), the International Society for

Technology in Education (ISTE) and the National Research Council (NRC and the National Science Education Standards) that collectively advocate the use of technology to positively impact student learning. The National Science Education Standards (NRC, 1996) notes that:

Students at all grade levels and in every domain of science should have the opportunity to use scientific inquiry and develop the ability to think and act in ways associated with inquiry, including asking questions, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, constructing and analyzing alternative explanations, and communicating scientific arguments (p. 105).

The integration on digital technologies supports the development of scientific inquiry as students collect, store, analyze and share data.

Probeware technology, which is a combination of hardware and software used for real time data acquisition, display and analysis, directly applies to the inquiry standard and gives students direct hands on experiences with scientific inquiry through the collection of data (Brown, 2005, April). In a personal interview with Carolyn Staudt of the Concord Consortium (Staudt, 2008) students in their Information Technology in Science Instruction (ITSI) project who used probeware scored significantly higher on what as compared to [students](#) that did not use probeware technology.

The hardware used can vary from laptop computers to handheld devices. Gado and Van't Hooft (2008) describe schools that used handheld technology interfaced with probes. Regardless of the hardware used, the advantages of using data collection technologies include the ability to quickly and accurately gather data, increase data sets over longer periods of time, and record and analyze data from events that would otherwise not be possible (Kreuger & Rawls, 1998). Over the last decade probeware has become available to the education market and has been transformed to include intuitive interfaces that are appealing to teachers. As a result of this it is estimated that purchases on probeware will increase by as much as 42% by 2011 (Trotter, 2008, March 26). With increases in the purchases of probeware, it seems likely that demands for professional development will also increase dramatically. An understanding of the perceived barriers and effective principles of professional development is needed.



**Figure 1: Student using LabQuest and probeware to measure UV radiation**

### **Need for Professional Development for Science Educators**

To meet the goals of science and technology standards it is critical that teachers have access to high quality professional development that teach both content as well as how to integrate technology to enhance their teaching (Bybee & Fuchs, 2006; Dani & Koenig, 2008). According to a report by the National Center for Education Statistics (NCES, 2000) equipment, time, technical assistance and leadership are all factors that may be barriers to teacher use of

technology. It also notes that teachers who spend more time in professional development and training are better prepared and are more likely to integrate technology into their teaching. NCES (2000) reports that 82 percent of survey respondents cited lack of release time as being a major barrier to the use of computer technology. Online professional development that can be accessed on their own time schedule will begin to alleviate this barrier. Also, online professional development provides “continued, sustained engagement in content with peers” that will translate into changes in teacher behavior and improved student learning (Sawchuck, 2009, March 26). Sawchuck (2009) also contends that a facilitated format of online professional development adds three major benefits:

1. It can increase the level of engagement.
2. It is not limited by time constraints.
3. It can increase the level of interactivity.

There are few that question the need for quality professional development, and it is a goal of essentially every educational organization as we prepare students with the knowledge and skills needed in the twenty-first century. Providing effective and meaningful professional development for science teachers is not a simple task but the National Research Council (NRC, 1996) have outlined the components necessary for it to be effective within the national standards for science. In 1998, Loucks-Horsley, Hewson, Love, and Stiles, (1998) identified seven principles that are addressed in effective professional development. The use of online tools to present professional development to teachers embed the majority of the seven principles, including the following four; 1) collaboration and community building, 2) reflection 3) supporting teachers in leadership roles and change agents and 4) continuous assessment and improvement. While few question the need for quality professional development, the tools to use to present online professional development continue to change. The analysis of new tools for use in online professional development is valuable.

### **Voicethread**

“The increasingly widespread use of Web 2.0 technologies to expand and deepen one’s social network is a relatively new but potentially important phenomenon that has implications for teacher education” and professional development in the twenty-first century (Greenhow, 2007, p 1989). Voicethread is a Web 2.0 online application that facilitates conversations and collaborations based on images, presentations, documents and videos. VoiceThread was developed by Ben Papell and Steve Muth in 2007, both of whom were supporters of teachers who were the early adopters of this technology (Weir, 2008). The ease of use and intuitive nature of VoiceThread makes it easy for teachers to master the basics of voicethread with a minimal amount of time and effort and will facilitate the use of this technology as professional development tool.

A VoiceThread is usually developed as a Power Point presentation that is uploaded to the web application where it becomes accessible (or shared) to the intended audience. As a typical Web 2.0 application, voicethread will allow users to create, interact, collaborate and customize content and online resources. A VoiceThread is similar to an online PowerPoint presentation where the

viewer is able to navigate through the various slides. However, voicethread has richer additional capabilities as viewers are given the ability to collaborate through various online tools. These tools provide the benefits of being part of an online community by improving student-student and student-teachers communication and communication tools that are used for commenting. Commenting can be accomplished through several different ways including: voice – microphone or telephone, text, audio file, or video – web cam.

Each voicethread can have up to 500 pages of slides and almost an unlimited number of comments can be posted on each of the slides. Each VoiceThread also has levels of security that determines whether it is private or public, who it is shared with and whether comments are allowed or not. Comments can also be moderated and remain private until it is enabled by the moderator (Muth & Papell, 2007). In a commentary published online in Education Week the writer notes that the “greatest opportunity Web 2.0 tools offer education, in fact, is the possibility of helping school leaders use the power of technology to amplify and accelerate staff development” (Cunningham & Restler, 2008). Considering the widespread availability and intuitive nature of voicethread it appears to be a good medium for presenting and supporting science teacher professional development training in the use of probeware.

## **Methods**

Barriers of distance and time, that have traditionally prevented effective professional development for in-service teachers, can be alleviated through the use of technology. Web 2.0 tools such as voicethread can facilitate the delivery of effective professional development through its ability to enable users to interact to develop a collaborative online community of learners. The goal of this project is to investigate the viability and usefulness of delivering online professional development through the use of voicethread.

## **Participants**

Eight science and math teachers, from the West Hawaii Complex Area were selected to participate in this project. Teachers were selected from the West Hawaii Complex Area as a convenience to the researcher because although the professional development was delivered online, teachers that were accessible through face-to-face interviews and discussions were perceived to ease the collection of data of this initial pilot study. Each of the participants has a minimum of 3 years of teaching experience and meets the criteria of being highly qualified (as defined by the No Child Left Behind Act) in their teaching line. Being highly qualified with several years of teaching experience will ensure that each participant has a strong foundation in the content that they are teaching.

## **Instructional Module**

The instructional module on probeware was designed using Gange’s instructional model and delivered through voicethread which allows online delivery with minimal hardware and software requirements. An introductory website that provided participants with the basic use and operation of voicethread was developed and was available to participating teachers at <http://web.me.com/sciencesolutions/Probeware> (Appendix D). This website also provided hypertext links to the instructional modules.



Gagne's instructional model (Gagne, 1985) outlines nine events of instruction which include gaining attention, presenting objectings, recall of prior knowledge, presenting a stimulus, providing guidance to the learner, eliciting performance, giving feedback, assessment and transfer of knowledge (Appendix B). Although this project will eventually include a series of approximately six modules that will be presented over a six-week period, only the first two modules are presented within the scope of this project.

The first two modules included (a) basic operations of probeware and (b) using time based data collection. Each of the modules were designed to be 10 -12 minutes in length but also allows participants to work at their own pace in completing independent, hands on activities. Each module begins with a presentation or demonstration of how probeware can be used in data collection based on module objectives. Participants are asked to recall examples of how they have traditionally collected data and share their experiences with others on voicethread. When appropriate instructional videos would be used to present content and participants would finally be asked to conduct an independent activit of experiment that applies skills learned.

### **Evaluation**

Each of the instructional modules were reviewed by a subject matter expert to evaluate the accuracy and validity of the instructional content. Two subject matter experts were consulted as the modules are developed. Carolyn Staudt, a curriculum designer and research from the Concord Consortium, has worked extensively on the educational uses of probes and handheld computers. She holds a Masters of Education from Kent State University. She also runs KidSolve, a company that provides schools with Internet-based products and data collection training. Dr. Bill Wiecking a physics teacher and director of the Sustainability Lab at Hawaii Preparatory Academy.

Prior to participating in these professional development modules each of the participants were given a pre-survey (Appendix A) to determine each participant's prior knowledge and experience with the use of probeware and online professional development. This pre-test was presented online as a Google form and consists of a combination of likert scale and open ended questions for participants to describe their online experience. At the end of the second module each participant was asked to complete a post-test consisting of questions similar to the pre-test. In addition, each participant was asked to meet with the researcher in a face-to-face interview to clarify or expand upon their responses to the pre/post-test.

### **Data Analysis**

Pre-/Post- surveys and interviews produced qualitative data that assessed content retention (probeware) but focused more on the effectiveness of the delivery tools (voicethread). Pre-survey results were compared to the post-survey to determine changes resulting from participation in the instructional modules.

### **Results**

Participating teachers included a range of experiences in the use of probeware and teaching expertise. Sixty three percent of the teachers participating had more than ten years of teaching

experience with only one (thirteen percent) participant having less than five years of experience (Appendix C, figure 1).

Of the eight teacher participants five are teaching at the secondary level and three are in self contained classrooms with two in the elementary and one being a Special Education teacher. All of the teachers have teaching responsibilities that include math or science in their teaching lines.

When asked about their participation in professional development in the last 5 years the majority of participants indicated that they have taken more than 10 workshops. Further inquiries into the kinds of PD taken indicate that the majority were face to face workshops that were provided at their school site and were not necessarily workshops in science and math. Only one teacher participant indicated participation in an online course. The most commonly cited barrier to participating in Professional Development was time, followed by distance and funding. It is also encouraging to note that “lack of opportunity” was not a major barrier even for the participants who all are from rural communities (Appendix C, figure 2).

It was not surprising to learn that the majority were only somewhat familiar with probeware technology but only one participant had actually used a LabQuest for data collection. Those that had participated in earlier probeware training used older probeware interfaces such as the LabPro or CBL and Texas Instrument calculators (Appendix C, figure 3).

For this study, voicethread was used as the primary tool for the delivery of professional development training. In the pre-survey participants were asked to rate their familiarity with voicethread. Being a relatively new Web tool, the majority of the participants were only slightly familiar with voicethread. Only one of the participants had an existing account with voicethread and used it to present content to her students on her class website (Appendix C, figure 4).

Each of the participants completed a post-survey that included a series of likert scale questions as well as a personal interview that helped to clarify some of their responses. The post survey indicated increases in the familiarity of voicethread and probeware. During the interview participants were asked to clarify their use of voicethread and although many indicated being familiar to the technology few were using it regularly beyond the scope of this research project (Appendix C, figure 5).

All of the participants indicated an increase in their familiarity in the use of probeware but a few felt that they may not be able to fully integrate the technology into their curriculum. This was expected at this point at which participants only worked through the first 2 modules that presented the basic operation of the LabQuest probeware. Follow up interviews with participants further clarified participant understanding of “integration” that ranged from simply using the probeware technology for data collection to the use of sophisticated data analysis tools on the LabQuest. This variation in participant’s definition of “integration” probably caused some participants to rate their ability in this survey item to be lower than others (Appendix C, figure 6 and 7).

When looking at the effectiveness of voicethread as a delivery tool for professional development, the data shows that the majority of participants agree that voicethread effectively facilitates communication. Further discussion during interviews noted the feeling of isolation and not

knowing if others were participating or even reading their comments and questions. To some degree this feeling of isolation was also true for the ability of voicethread to improve collaboration but ultimately most participants agree that the modules were able to increase collaboration between teachers that had similar interests in probeware (Appendix C, figure 8 and 9).

Over eighty five percent of the participants rated voicethread as an excellent means of delivering online professional development (Appendix C, figure 10). The most commonly cited benefits of using voicethread was that it overcame the barrier of time and allowed professional development to be delivered according to their schedule and was easily accessible. One of the negative aspects of using voicethread was that feedback on questions and comments were not instant and participants were unsure of when feedback was posted to voicethread modules. One participant suggested that voicethread should be used synchronously to alleviate the feeling of isolation that some experienced in an asynchronous environment in which the modules were designed to be implemented.

Anecdotal data (Appendix C, Table 2) collected during the interviews suggests several reoccurring themes where participants felt that professional development presented through voicethread allow them to view the presentations as their schedules allowed and was easily accessible. Most also felt that the use of voicethread asynchronously raised concerns of not having real time conversations or immediate feedback on questions and comments.

### **Limitations**

The instructional module in this project was limited to the basic use of probeware due to the short period of time that was available to implement the modules and collect data. Math/science in-service teachers will test the instructional modules although any in- or pre-service teachers that are interested in the use of probeware could eventually use it. The content of the modules was determine by needs of science and math teachers in the West Hawaii Complex Area as determined by a professional development survey that was given to teachers in the 2008-2009 school year.

It is also important to note that teachers selected for this research are in-service teachers that have various levels of classroom expertise in science education and the instructional modules have been developed to capitalize on their experiences.

### **Discussion**

Considering the resulting information gathered during this research some of the issues of using voicethread for delivering professional development include providing timely responses, encouraging commenting on voicethread and reducing the feeling of isolation. Based on this feedback it is recommended that future professional development using voicethread be continued with a number of modifications. In this project the instructional modules were completely asynchronous which contributed to the “feeling of isolation” that was experienced by the participants. The data collected suggests a modification that includes a synchronous instructional module be presented at least once for each module. This will still allow participants that are “comfortable” with a fully asynchronous environment to participate but provide the needed

guidance and collaboration for those that are not. It would be expected that as participants continue to use voicethread it would become more familiar and therefore provide the degree of comfort that will allow them to move into a more asynchronous environment. This in turn will also encourage participants to be comfortable in posting comments and questions on the voicethread.

During the time frame given for completing a module the researcher visited the module each evening to review or answer comments and questions that were posted. Although response was promptly provided, a number of participants noted that they were always unsure of when a response was posted. While voicethread is enabled with notifications of when a comment is posted it apparently did not meet the needs of many of the participants. Notification that not only notify participants on the voicethread page but sends them a specific message that includes the comment would be particularly useful.

Some of the major advantages of using voicethread are its online accessibility, self paced nature of instruction and asynchronous instruction. As noted in the pre-survey the most commonly cited barrier to professional development is time and presenting synchronously may diminish the ability of voicethread to alleviate this obstacle. Having voicethread accessible beyond the synchronous presentation should address this concern as it will allow teachers to continue to take part in the professional development without synchronous participation.

## **Conclusion**

Although science probeware has been in schools for over a decade, it is definitely underutilized and many times can be found tucked away in a closet because of inadequate training. The use of data collection technology, when used, has been shown to be an effective means for student achievement and understanding of science content (Staudt, 2008). This project developed two introductory instructional modules to teach high school math and science teachers about using Probeware. Gagne's instructional module was used and voicethread was selected as a tool to facilitate an online professional development experience. Being a relatively new Web 2.0 technology, research on VoiceThread to determine its effectiveness in delivering professional development is sparse. Like other Web 2.0 tools voicethread has the capability to address the barriers that have traditionally prevented effective technology training. This study found that providing teachers with online professional development on the use of probeware (or any other technology) through the use of voicethread may alleviate many of the traditional barriers to effective professional development of in-service teachers. This being said, it is also critical to address the concerns that participants in this research project have pointed out.

This study found that voicethread can be an effective tool for presenting professional development for in-service teachers. The design of effective professional development modules using voicethread will need to address the participants need for time, feedback and collaboration (community building).

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## Appendix A

### Participant survey:

#### Professional Development on Probeware via VoiceThread

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Please spend a few minutes completing the following survey. All information submitted will be confidential and will only be viewed for the purpose of data analysis by the researcher.

How many years have you been teaching?

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- ☐ 1-5
- ☐ 6-10
- ☐ more than 10

Choose what describes your present teaching position?

---

more than one box can be selected

- ☐ Elementary
- ☐ Secondary
- ☐ Math
- ☐ Science
- ☐ Technology

Choose what describes your present content area that you teach?

---

more than one box can be selected

- ☐ Math
- ☐ Science
- ☐ Technology

Over the last 5 years, how many Professional Development workshops or courses have you attended?

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do not include mandatory PD workshops...for example training on blood borne pathogens.

- ☒ None
- ☐ 1-5
- ☐ 6-10
- ☐ more than 10

Which of the following have prevented you from attending Professional Development in the past?

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Check all that apply

- ☐ Distance
- ☐ Time
- ☐ Funding
- ☐ Interest (PD offered does not interest me)
- ☐ Location of PD
- ☐ Lack of opportunities

I am familiar with VoiceThread and use it extensively.

Select "3" if this question does not apply or if you are unsure of your answer at this time

1 2 3 4 5

Strongly Agree ☐ ☐ ☐ ☐ ☐ Strongly Disagree

The use of VoiceThread encourages communication between participants.

Select "3" if this question does not apply or if you are unsure of your answer at this time

1 2 3 4 5

Strongly Agree ☐ ☐ ☐ ☐ ☐ Strongly Disagree

The use of VoiceThread facilitates collaboration between participants.

Select "3" if this question does not apply or if you are unsure of your answer at this time

1 2 3 4 5

Strongly Agree ☐ ☐ ☐ ☐ ☐ Strongly Disagree

VoiceThread is an excellent (effective) means of delivering online professional development.

Select "3" if this question does not apply or if you are unsure of your answer at this time

1 2 3 4 5

Strongly Agree ☐ ☐ ☐ ☐ ☐ Strongly Disagree

I am familiar with the use of probeware.

Select "3" if this question does not apply or if you are unsure of your answer at this time

1 2 3 4 5

Strongly Agree ☐ ☐ ☐ ☐ ☐ Strongly Disagree

I am able to integrate the use of probeware in my teaching.

Select "3" if this question does not apply or if you are unsure of your answer at this time

1 2 3 4 5

Strongly Agree ☐ ☐ ☐ ☐ ☐ Strongly Disagree

I would like to participate in future online professional development.

Select "3" if this question does not apply or if you are unsure of your answer at this time

1 2 3 4 5

Strongly Agree ☐ ☐ ☐ ☐ ☐ Strongly Disagree

Please describe any negative aspects of receiving the content of professional devieopment through VoiceThread.

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Please describe any positive aspects of receiving the content of this professional devieopment through VoiceThread.

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Please enter any other comments that you would like the researcher to know.

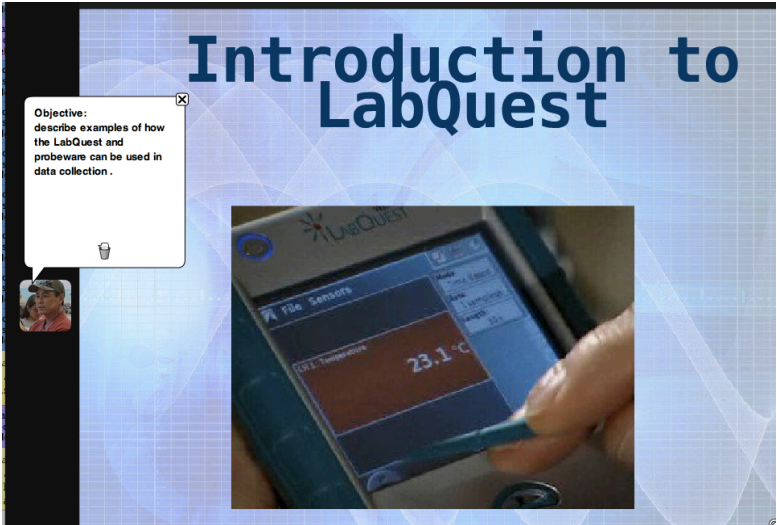
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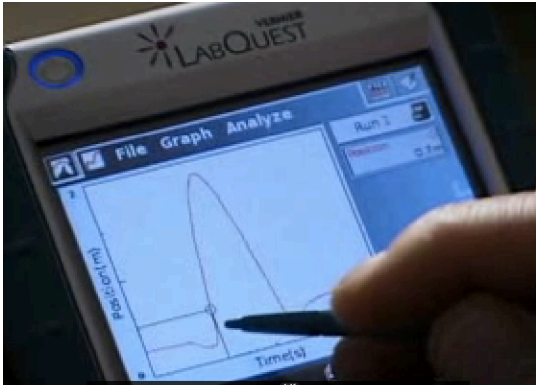
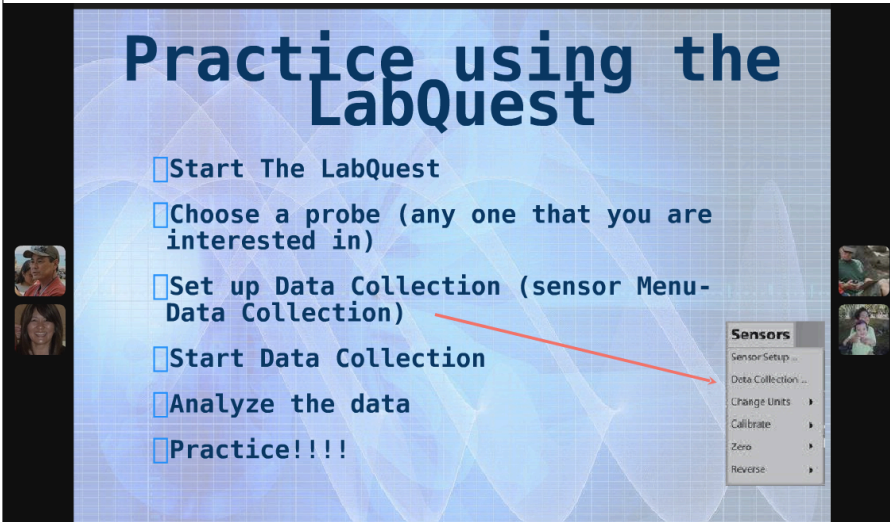
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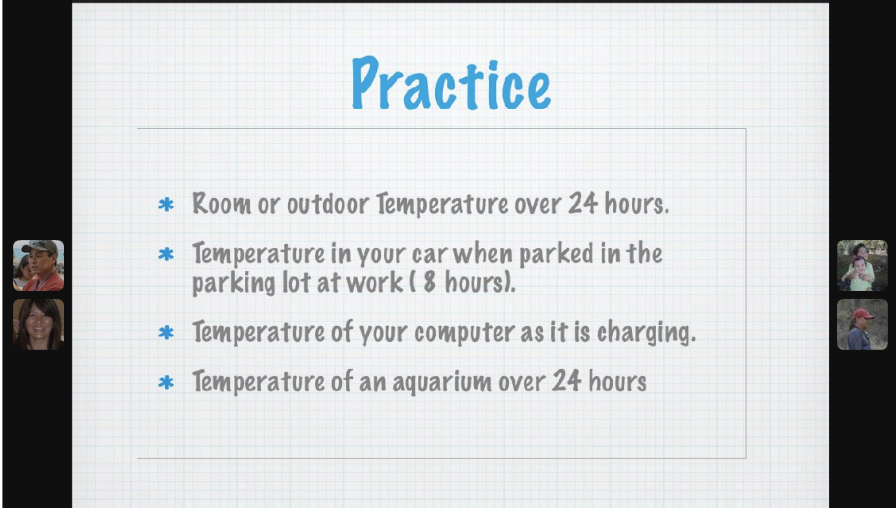
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## Appendix B

**Table 1: Example of Gagne's instructional model applied to instructional modules**

| <i>Table 1 Module One aligned to Gagne's instructional model</i> |   |
|--|---|
| <b>Gagne's Events of Instruction</b>                             | <b>Instruction Module (<a href="http://voicethread.com/share/849149/">http://voicethread.com/share/849149/</a>)</b>   |
| Gaining Attention  | Module presents an example of how probeware can be used in data collection.   |
| Informing the Learner of the Objective                           | <p>Objectives of the module are presented. For example –participants will be able to collect data using LabQuest and probeware (temperature probe).</p>  <p>Screenshot of module showing lesson objective.</p> |
| Stimulating Recall of Prior Learning                             | Participants are asked to recall examples of data collection activities that their students have been required to do. What are the tools that are used? How is the data stored, analyzed and shared?  |
| Presenting the Stimulus  | Participants are taken through the steps of setting up and using probeware.   |

|                            |   |
|----------------------------|---|
| Providing Learner Guidance | <p>Participants are shown a demonstration on how probeware can be used to collect, store and analyze data. A video by Vernier is used to provide an overview of the features and uses of probeware and LabQuest.</p>  <p>Video demonstrating LabQuest and Vernier probeware</p> |
| Eliciting Performance      | <p>Participants are asked to do data collection independently and share their experience with others.</p>  <p>Screen shot of introductory module</p>   |
| Giving Feedback            | <p>Participants submit a self-check, posts comments and questions and the instructor gives feedback.</p>  |

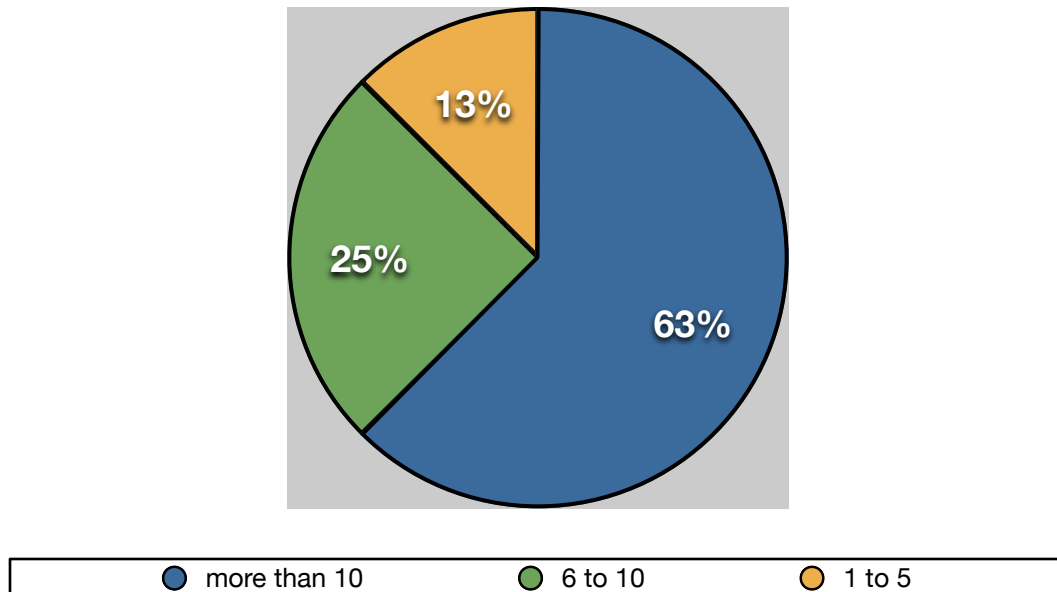
|                                  |   |
|----------------------------------|---|
| Assessing Performance            | <p>Participants are given a practice activity to conduct an experiment that requires the use of probeware to collect, store and analyze data.</p>  <p>Screen shot of practice activities.</p> |
| Enhancing Retention and Transfer | <p>Participants are asked to create or adapt an activity that integrates probeware technology.</p>  |



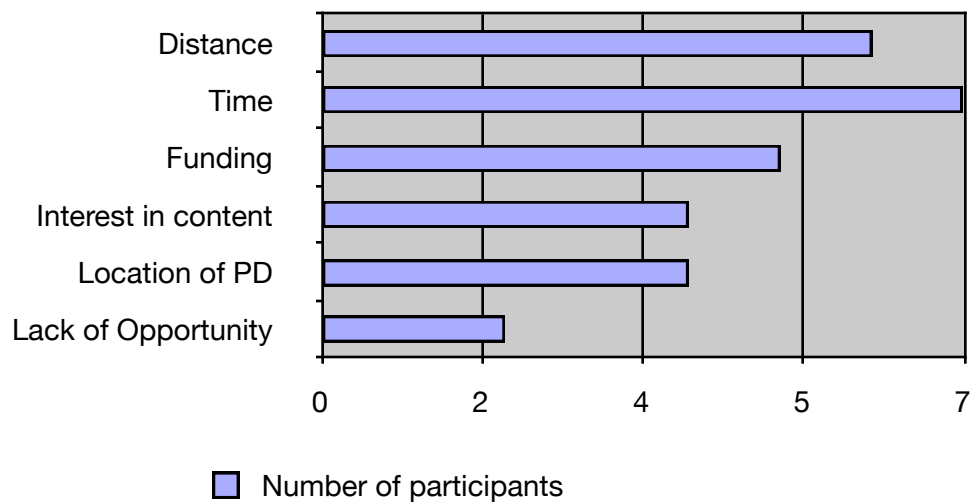
## Appendix C

### Survey Data

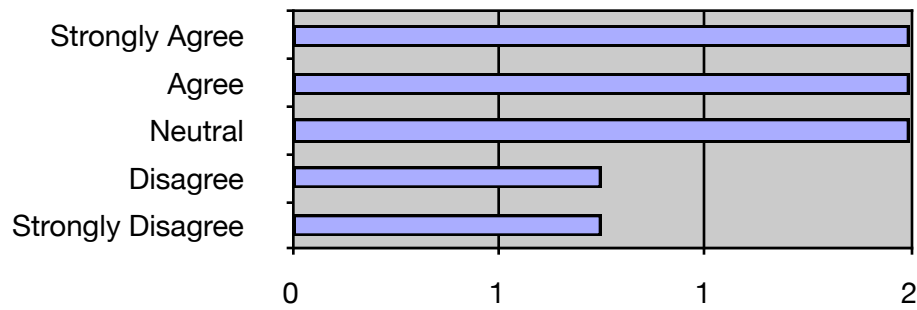
**Figure 1: Years of Teaching Experience**



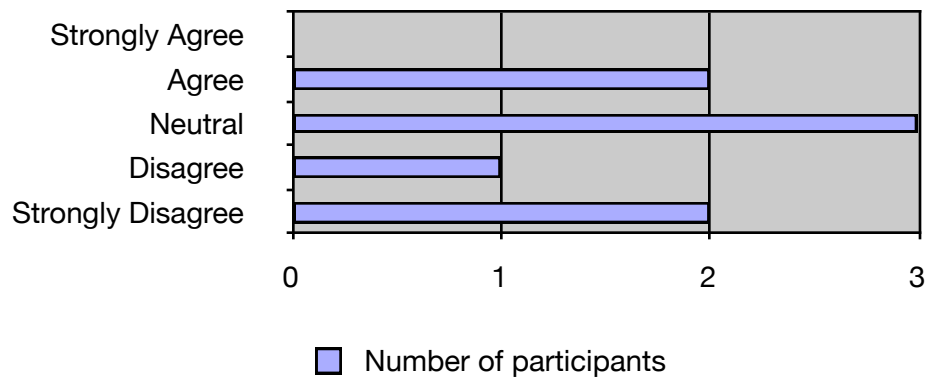
**Figure 2: Pre-Survey: “Which of the following have prevented you from attending PD in the past?”**



**Figure 3: Pre Survey: “I am familiar with the use of probeware”.**

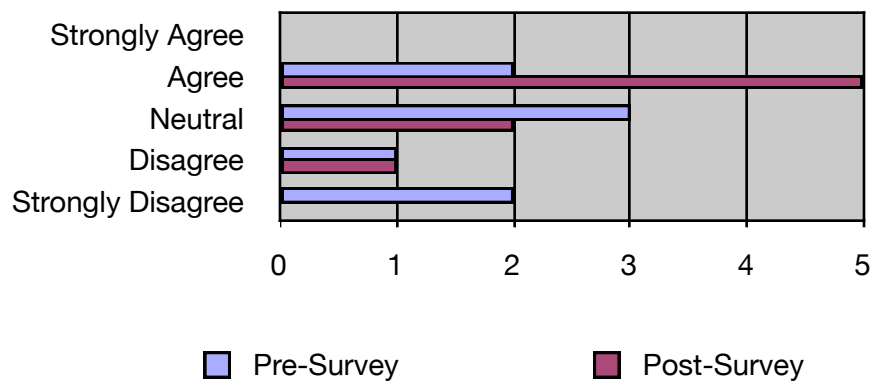


**Figure 4: Pre-Survey:- “I am familiar with voicethread and use it regularly”.**

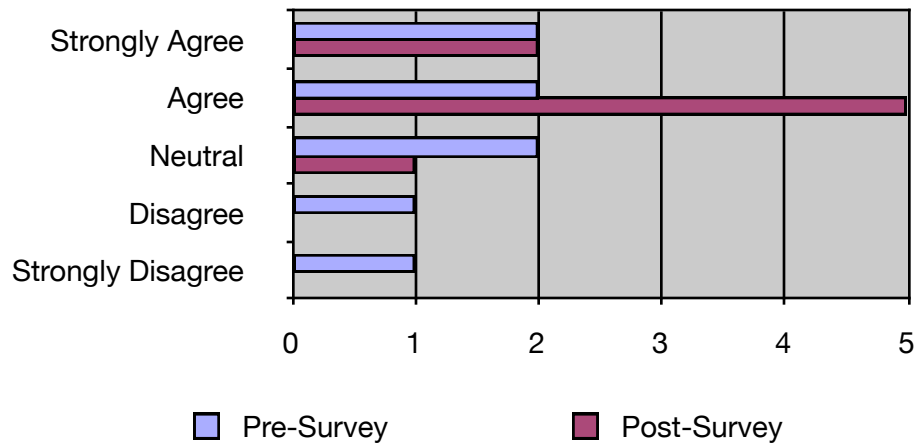


### Post Survey Data Analysis

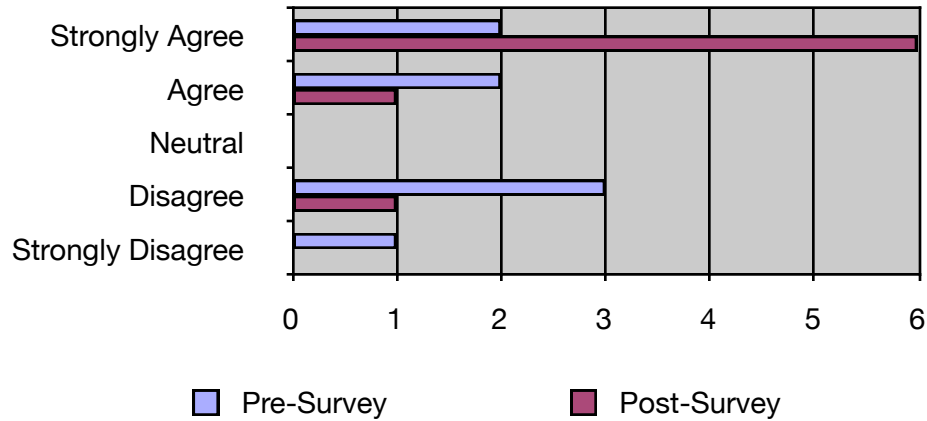
**Figure 5. Survey item:- “I am familiar with voicethread and use it regularly”.**



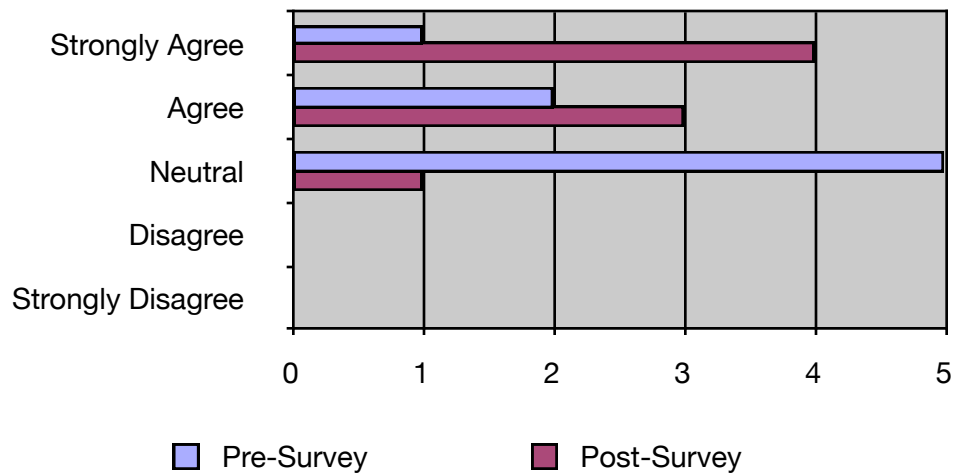
**Figure 6. Survey item: “After completing module 1 and 2, I am familiar with the basic use of probeware”.**



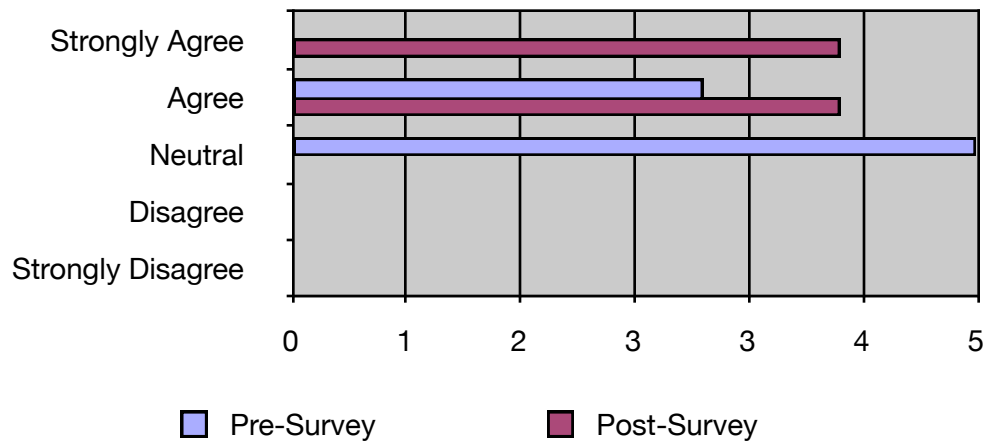
**Figure 7. Survey item: “I feel confident that I will be able to integrate the use of probeware”.**



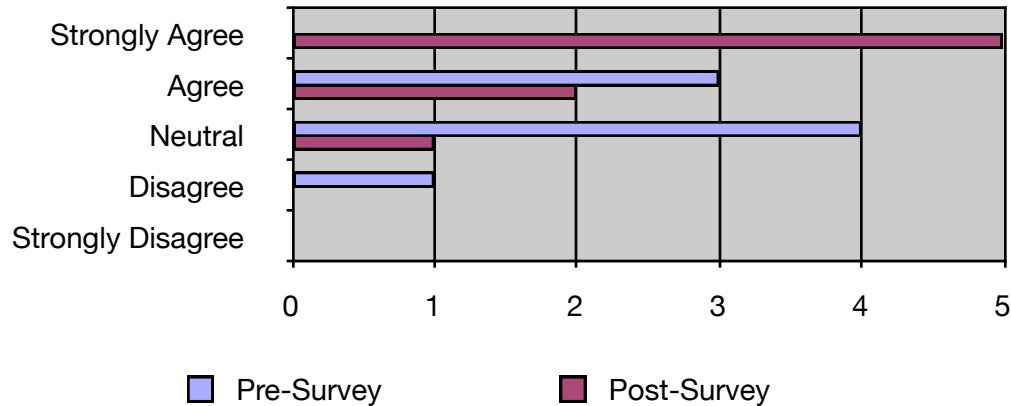
**Figure 8. Survey item: “Voicethread facilitates communication between participants”.**



**Figure 9. Survey item: “The use of voicethread facilitates collaboration between participants**



**Figure 10: Survey item: “Voicethread is an excellent means of delivering online PD”.**



**Table2 : Anecdotal data on participant feedback**

| Positive aspects of using voicethread to deliver PD  | Negative aspects of using voicethread to deliver PD  |
|--|--|
| <p>I could do training on my own time in the comfort of my own home, so saves time and money. No travel time especially for us in Kona. We have opportunities to receive quality inservice.</p> <p>I could go back and review slides to get better understanding.</p> <p>I could post comments and questions in a comfortable way- type or record, and got feedback right away.</p> <p>I gain great skills and information that I can integrate into my classroom immediately. Love the Voicethread training and can't wait for more. Thank you!!!</p> | <p>Sometimes the view of what was on probeware screen was too small. Maybe there was a way for me to increase view size on my laptop that I am not aware of.</p> |

| Positive aspects of using voicethread to deliver PD  | Negative aspects of using voicethread to deliver PD   |
|--|---|
| <p>I can take the PD on my own time.<br/> I can go back and review something if I didn't get it the first time.<br/> I can see the discussion thread.<br/> I can ask questions in a variety of ways (record my voice, text, video)<br/> I can see other participants questions and the facilitators answers.<br/> Someone else's questions don't interrupt the PD.<br/> I can move through the PD at my own pace.</p>  | <p>Maybe just that feedback isn't instant.</p>  |
| <p>I could do training on my own time in the comfort of my own home, so saves time and money. No travel time especially for us in Kona. We have opportunities to receive quality inservice.</p> <p>I could go back and review slides to get better understanding.</p> <p>I could post comments and questions in a comfortable way- type or record, and got feedback right away.</p> <p>I gain great skills and information that I can integrate into my classroom immediately. Love the Voicethread training and can't wait for more. Thank you!!!</p> | <p>No real time communication with instructor or other participants. When comments of questions were added I was never sure about when or if it would be answered.</p>  |
| <p>Provided instruction that was easily accessible and available at any time or place.</p>   | <p>I guess if you are a person who is shame or would not like their comments read or heard by others, is there a way to hide those comments from others. I don't mind though! Some students might feel afraid to leave a comment that others can see.</p> |
| <p>I can do it my own pace and during my free time<br/> I can go back to slides and pause when I need to any time and the person who gave the presentation does not have to be in front of me when I have questions or forgot something.</p>   | <p>the only negative would be if the site becomes blocked at school or if the internet is down at that time.</p>  |
| <p>I (and ****) could sit in the comfort of our living room and listen to and watch the presentations without unnecessary visual or auditory distractions from other people. On face to face presentations, there is always some kind of distractions.</p>   |   |

## Appendix D

Training website (<http://web.me.com/sciencesolutions/Probeware>)

welcome

using voicethread

what is a voicethread?

module 1

module 2

labquest update

consent form

### *Using VoiceThread for Professional Development:*

### *Probeware training for science teachers*

*Alan Nakagawa, UH Manoa*



#### *quote:*

"Turning students into apprentice scientists has long been a goal of K-12 science educators. But it's been many years since real scientists used the paper logs, alcohol thermometers, balances, stopwatches, meter sticks, and other gear that remain staples of many high school science labs. And that's where 'probeware' comes in."

Andrew Totter, Education Week

### *Purpose*

The purpose of this instructional design project is to evaluate the efficacy of voicethread and other Web 2.0 tools as an instrument to deliver online professional development to in-service science teachers. The instructional module being developed will be presented over the web through the use of VoiceThread, a Web 2.0 technology. The instruction will incorporate the use of Web 2.0 technology and will be accessible to all science K-12 teachers. As the instructional module will be online and available at any time or place, it will allow the user work at his/her own pace and time. Follow the links at the top of this page to get started by learning about using Voicethread.